Mechanical Technology

Technology Opportunity

Superior One-Way Bearing Assembly

The National Aeronautics and Space Administration (NASA) is interested in identifying commercial partners to license and further develop a special high-performance one-way bearing and to expedite bringing this technology to market.

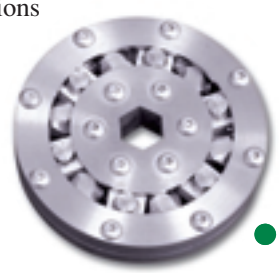
Benefits

The advantages of the NASA one-way bearing assembly include the following:

- The 3-D sprags and the bearings share a common race, creating a more compact system
- The system has superior strength and locking capabilities in a very compact package
- The 3-D sprags act as spacers for the bearings, which reduce friction and provide smoother operations
- The bearing system stops instantaneously at any position
- Both the 3-D sprags and bearings are serviced by a common lubricant path
- The coupling force and torque acting on the sprags and bearings is greatly reduced

The performance characteristics of the new bearing assembly are far superior to existing one-way bearings.

- It is more compact by a factor greater than eight
- It is stronger by a factor of four
- It is capable of operating in a vacuum (with special lubricants)



Commercial Application(s)

Goddard's one-way bearing assembly could be used anywhere a conventional one-way bearing is used. Examples include:

- Over-running clutches: High performance aircraft, helicopters, automotive transmissions, lawn and garden equipment, tools and small engines
- Mechanical indexers: Inclined conveyors, cranes, elevators and other equipment

The Technology

The NASA one-way bearing assembly combines two previous NASA technologies (3-D sprag and thrust rollers) to provide a superior one-way bearing. Traditional one-way bearings typically consist of 2-D sprags in one race and the rolling bearings in a separate race, both concentric about a common rotating shaft. The sprags and the bearings are typically located along the axis of the rotation of the shaft, one above the other. These rolling bearings are typically ball bearings, but they could include spherical bearings, roller bearings or tapered bearings. The NASA one-way bearing assembly places 3-D sprags and thrust rollers in a common race to create a more compact and robust one-way bearing. The 3-D sprags give the bearing superior locking capabilities and the thrust rollers provide the ability to handle thrust loads

Commercial Opportunity

The one-way bearing assembly is part of NASA's technology commercialization program. This program seeks to stimulate commercial use of NASA-developed technologies. Prototypes of this bearing assembly have been built and a patent application has been filed. Commercial companies are invited to partner with Goddard to bring this innovative bearing system to the commercial marketplace.

For More Information

If you are interested in more information or would like to pursue partnership opportunities with NASA Goddard, please contact:

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